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February 2002

## Non-Implementation of an IS Strategy Within A UK Hospital: Observations From a Longitudinal Case Analysis

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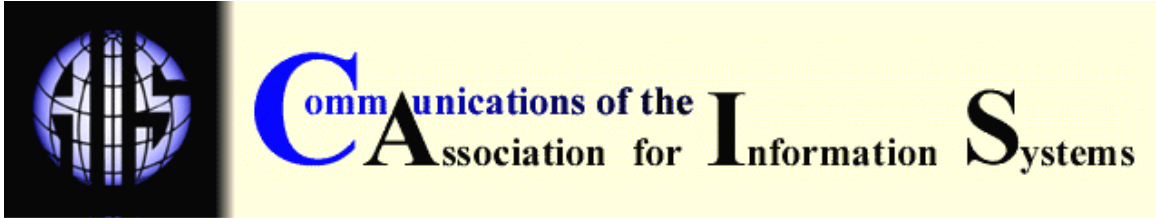
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## NON-IMPLEMENTATION OF AN IS STRATEGY WITHIN A UK HOSPITAL: OBSERVATIONS FROM A LONGITUDINAL CASE ANALYSIS

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### ABSTRACT

This paper presents an in-depth longitudinal case analysis of the non-implementation of an information technology (IT) strategy within a UK hospital. The analysis covered the period from 1991 to the present day. The contents of the IT strategy are described and compared to the proposed systems and schedule is contrasted with the actual IT systems delivered. Because the case deals with the national health arrangements within the UK, we begin with a brief description of information management (IM) within the National Health Service (NHS) to provide background for readers outside the UK. This discussion is extended to consider the specific context of IS development. It notes the experience of a single patient being transported through medical procedures to illustrate the relevant systems which are enabled. The case documents the ambitions and achievements of the managers involved and concludes with the observation that their decisions did actually generate added-value to the IS implementation process even though, in the circumstances, no recognized strategy emerged.

**KEYWORDS:** health information systems, IT strategy

### I. INFORMATION SYSTEMS WITHIN THE UK NATIONAL HEALTH SYSTEM

The treatment of a patient in hospital requires the support of many information systems that support the flow of clinical, administrative, and financial data. The clinical data includes diagnostic information, doctor's reports and the results of tests. The data content includes numbers, structured text, codes, and free form text. It also includes images, of both documents and test results, for example radiology results. Administrative data traces the progress of the patient through a hospital stay including ward transfers, staff allocations, and special needs. Financial data record the costs of the stay and may include invoicing and ordering. Such complex information flows require good information systems management and attention to integration and support.

However, the state of IT in hospitals is often not up to the ideal standards. Often IT from different sources do not link. Data is duplicated on different systems. Different departments record their own patient data without considering other departments' or specialties' needs. IT staff may be not up to coping with the complexity of hospital information systems. Understaffing and lack of skills contributes to bad IS practice and leaves hospitals at the mercy of IS suppliers. While IT resources may be less than those of the average business, demand for information that is accurate and secure may be greater. The penalties of using inaccurate information are greater and the complexity of information flows that must be dealt with make the needs of a typical manufacturing business look very small.

Faced with such complexity, how does the IT manager develop a strategy for IS in a hospital and how is that implemented? This case study looks at how IS developed in one UK hospital. Taking as its starting point the development of an IS strategy document, the case illustrates how actual implementation drifted away from any of the intentions described in the IS strategy. It shows how, far from providing a blueprint for IT development in the hospital, the IS strategy provided a wish list which remained unfulfilled after more than ten years. An exploration of both the external and internal organizational forces acting on the hospital provides some clues as to why the written IS strategy was so off-target.

To help readers who are not in the UK understand the case, we first present a brief description of the National Health service (Section II). We then outline an actual patient experience to illustrate the point made previously and to set the context for the needs of any IS strategy (Section III). Section IV presents the case description.

## II. THE NATIONAL HEALTH SERVICE IN THE UK

The National Health Service (NHS) provides healthcare in the UK, free at the point of delivery, paid for through taxes and national insurance. Primary care is delivered by General Practitioners (GP's), and secondary care by hospitals, through referral by GPs. Until the late 1980's, secondary care was managed using central hierarchical structures. Regional health authorities administered the budgets of hospitals and controlled investment. Regional health authorities also provided most of the hospitals' IT facilities. Under a hierarchical structure, regional health authorities administered district health authorities, which controlled area health authorities. A 1989 White Paper, 'Working for Patients', (HMSO, 1989) provided the most significant cultural change to the NHS since its inception in 1948. This change involved the creation of an internal market in which purchasers (local health authorities and GPs) were given budgets to buy health care from providers (including acute hospitals, community hospitals and ambulance services). The hospitals became independent trusts, with their own management and financial control, competing with each other for contracts from purchasers. Fifty-seven hospitals became trusts in 1991. By 1995 all health care was provided by NHS trusts.

At the same time as the overall organization of the NHS was changing radically. Clinicians and managers were becoming aware of the need to control resources and audit clinical activities. Issues concerning value for money and the repeatability of procedures were being considered. From 1988 onwards there was an increasing emphasis on financial budgeting, resource management, and determining the exact costs of hospital episodes and procedures. Such a focus was not present before. Efforts were made to cost individual operations such that contracts could be established by providers with purchasers that either specified a block of treatments, i.e. x operations of a particular type to be carried out by a hospital within a time period, or charged on a cost per case basis. Contracting required an understanding of exact costs for treating each particular diagnosis.

All these elements,

- changes in the organizational structure of the NHS,
- the need to determine exact costs, and
- a move towards medical and clinical audit,

required significant investment in information systems. Hospital trusts were now responsible for implementing their own information systems and running their own IT departments. Coding systems were now required which enabled computer coding of diagnoses and procedures. This

work needed to be done on a short timescale and from a very primitive starting point. IT in hospitals was archaic. IT skills levels were low. Many hospitals had little experience developing IT strategies and implementing IT. Core systems were not in place and those systems that were available lacked integration. It was not possible to put together an entire picture of what happened to a patient during a hospital stay. Therefore it was not possible to cost that stay.

During the 1980s and 1990s many central information management initiatives were thrown at hospitals. Central committees and groups, such as the Information Management Group, provided reports and strategies that hospitals were expected to follow. These directives were backed up with finance ear-marked for the purchase of specific information systems. In 1983, the Griffith Report (Griffith, 1983) identified the need for a general management function and accounting systems to support them. Management budgeting systems were developed by regional health authorities that were of little value for hospitals. The work of the Korner Committee between 1984 and 1987 identified the need for information on the cost of procedures to support decision making. It also defined a national minimum dataset of information which should be held on patients and their hospital stays. This minimum dataset provided a useful basis for the development of information systems in hospitals. However, a 1986 review (DHSS, 1986) suggested that existing information systems in hospitals could not relate cost data to clinical activity. The review gave rise to a resource management initiative which involved setting up six pilot sites. The resulting databases captured existing information from a variety of systems in the hospital and provided aggregate records for individual patients and groups of patients. These case mix management databases spread to most hospitals as central government provided finance for their procurement.

However, case mix management systems never lived up to expectations. They were generally seen as failing to provide useful clinical information although some were used as costing systems. Also, even before the resource management initiatives were reviewed adequately, a new information management and technology strategy was launched. Information systems in the NHS had not been shown to deliver any substantial benefits. This experience was ignored in the new strategy, issued in 1992 (NHS IMG, 1992), which proposed fully integrated hospital information systems (HIS) by 2000. Complex hospital information systems were to be installed at hospitals which would allow separate IT applications to work together.

A HIS central team in the South of England (the same region as St Mary's, the case study hospital) would support pilot sites at Greenwich, Darlington, and Nottingham. Such HIS projects would cost more than £5 million and were seen to deliver little. Together with some high-profile failures, including a computer system in the same region as St Mary's, such use of money without clear benefits led to the imposition of strict guidelines concerning IT procurement. These constraints made it much more difficult to procure large-scale systems. The construction of business cases became complex and time-consuming. These changes affected St Mary's as IT staff struggled to meet the changing demands for business cases from different authorities.

The 1992 Information Management and Technology (IM&T) strategy, which proposed shared and integrated information was not successful. An emphasis on financial data still overshadowed clinical needs. The strategy was centrally driven, technology-oriented, and largely ignored at a local level. A 1998 Information for Health strategy (NHS Information Authority, 2001) superseded the 1992 strategy, while remaining equally ambitious, envisaging hospital outpatient booking from GPs' surgeries, the integration of systems and a focus on the electronic health record (EHR). This strategy was influenced by the increasing availability of Internet technology. Between 1995 and 2001, considerable effort was put in to developing an NHS-wide Intranet (the NHSNet). Problems with security and acceptance by health professionals delayed implementation, but the concepts of the Intranet began to influence IS strategy within hospitals.

Furthermore, a move toward evidence-based medicine increased the requirement for Internet-based information resources. Access to medical journals and databases was required from within hospitals. Part of the 1998 Information for Health strategy required the development by hospitals of a local implementation strategy. This strategy would indicate local priorities and document plans to achieve the required outcomes for Information for Health. It included:

- plans for supporting links to GPs and health authority systems,
- links with other agencies such as social services and

- indications of plans for improving the information available to patients, particularly using Internet-based systems.

Local implementation strategies gave hospitals more freedom about how to achieve goals, while highlighting areas that needed addressing such as benefits realization and project planning. Local implementation strategies also highlighted funding implications and indicated where national guidelines required fully worked business cases.

### **III. A PATIENT'S EXPERIENCE**

When John developed a lump near the groin and suffered some discomfort, he visited his GP, already suspecting that he had a hernia. When he was referred to the hospital, his Electronic Patient Record (EPR), usually kept by the GP, was transmitted over a health network to the hospital. An outpatient's appointment was booked with General Surgery and a letter sent. The clinic manager used details from the Patient Administration Systems (PAS) to schedule the outpatient clinic. When John arrived for the outpatient appointment, details were checked in the PAS and alterations made to update telephone numbers. The surgeon quickly confirmed the need for an operation involving a short stay in hospital. John's name was added to a waiting list for this operation. As a result of a regular review of waiting lists by the medical secretary, John received an early date for the operation.

Some preliminary tests were required. Hematology and Biochemistry received the requests from the outpatients' clinic over a network link and, on receiving the samples, carried out the tests and recorded the result in a pathology system.

When John arrived at the hospital for a hernia operation his details were already recorded on the PAS. John was admitted and allocated a ward. The ward manager received the detail data and allocated him a bed. His nursing record was begun using a standard care plan, available in a nursing system that defines the care activities for this type of hernia operation. The test results were transmitted to the ward through a ward ordering system which enables requests for tests and procedures to be entered from the ward and results to be received in the ward. Both the patient's records and the test results were immediately accessible from the bedside by the surgeon. Later, John was prepared for the operation. The nurse updated John's care plan in the nursing system. Porter services were booked through the ward ordering system. In the operating theatre, details of the operation had been recorded in the Theatre system and the theatre, staff, and materials booked. When John had the operation, information was recorded including time of anesthetic administration, time of start of operation, and time into recovery. Clinical codes were used to define the diagnosis, the operation, and any procedures or tests.

While John was back in the ward recovering, details from the PAS, the theatre system, pathology, and the nursing system were transmitted to the case mix system thus producing a complete record of what had happened to John. The next day, John was sent home. His discharge was recorded in the Inpatients module of the PAS and a discharge summary letter was transmitted to his GP. An updated EPR was returned to the ownership of the GP. Another inpatient episode of care was complete.

Using details in the case mix system, a cost for the operation could be calculated. This cost would be taken off the budget for the GP fundholder who requested the services of the hospital. While UK hospitals do not charge patients for operations, cost calculations enable the control of budgets in what is a purchase / provider system where the purchaser may be a local health authority or a group of GPs. Later, as part of the Clinical Governance process, an audit was carried out of hernia operations over the past year. The analysis of outcomes for hernias using data on case mix showed that recurrence has been reduced, but there was some worry about infections, particularly in one ward.

### **IV. CASE ANALYSIS: ST MARY'S HOSPITAL**

St Mary's Hospital is a District General Hospital with 398 beds and provides medical and nursing services, which include both general surgery and medicine, and other specialist services in urology, orthopedics, cardiology, gastroenterology, rheumatology, maternity, and pediatrics. All these services are supported by diagnostic imaging, laboratory, ambulance, pharmacy, and

therapy services, which are all on site. As the major hospital in a tourist area, it deals with many visitors during the holiday season, generating a large amount of non-booked admissions work. Situated on the Isle of Wight, St Mary's was always closely linked with hospitals on the English mainland, in Portsmouth, which provided specialist services. Clinicians travel from the mainland to conduct surgeries and St Mary's patients travel to Portsmouth for treatment in particular specialties.

### **THE INFORMATION SYSTEMS STRATEGY DOCUMENT**

In 1990, in response to the Government's white paper, 'Working for Patients' (HMSO, 1989), an information strategy group was set up. This group, consisting of clinicians, finance, personnel and general managers together with the resource management director, considered the hospital's information needs and reported in April 1991. The report identified the need for St Mary's to be self-sufficient in information and its supporting technology. An in-house information department was to be developed, staffed by IT professionals and managed by a senior professional. The hospital committed itself to the phased implementation of an integrated hospital information system.

The document focused on the medium term, 1992-1996. The objectives identified were to be self-sufficient in information by March 1992, and to have an integrated Hospital Information System (HIS, see Glossary, page 19) by March 1993. Wards would have a single terminal providing access to pathology, nurse information system (NIS), patient administration system (PAS), case mix, child health administration, radiology, and ward-based ordering. The strategy recognized the need for acquisition, disaster planning and data protection standards, the idea of a single point of data collection, and the need to base IT requirements on sound business cases. A need for a benefits realization program was outlined. The strategy stated that the hospital would only consider proven solutions from suppliers with established track records. Information needs were outlined and current systems and current improvements discussed.

During 1991, outpatient and waiting list modules for the existing PAS were to be implemented, a pathology system was to be replaced by a new system, and operational requirements document produced for radiology and pharmacy systems. New ledger and personnel systems were to be installed. A case mix management system was to be installed and project plans for a NIS were to be submitted to the hospital board in April. The strategy identified PAS replacement as a priority and confirmed the intention to implement existing planned systems. The need for training was discussed.

While the strategy identified the need for an integrated HIS, it also suggested that without a phased approach the costs would be prohibitive and that progression with NIS and Case Mix could not be delayed. It recommended employing consultants to identify options for a HIS system. Consultancy work would be completed by September and the course of action determined by March 1992. As far as networking was concerned, the report referred to a network strategy produced in 1989 which recommended a token ring fibre optic network. The report advised that this recommendation should be revisited by consultants, funded from the resource management initiative.

The strategy identified the need for a training facility, to be established in a ward which would be vacated in May 1991. Long term developments, assuming a fully operational HIS by 1995, included GP and Public Health links. A section on finances, identifying sources of funding, and recurring revenue and capital changes for existing and future systems was left blank.

### **THE NON-IMPLEMENTATION**

To progress the strategy, a business case had to be developed and submitted to Wessex Region, which in 1991 still retained control of spending. The Resource Manager built a business case for a hospital-wide information system, incorporating theatre, order communications, case mix, nursing, a local area network and a computer room. The bid was submitted to Wessex region in October 1991. Wessex Region reviewed the business case. The Region asked for the computer room and the network to be presented as two separate bids. The computer room was seen as constituting capital and estates. The review was still in progress in October 1992 when Region put aside £21 million for a region-wide PAS replacement. The replacement was to cover

eight separate hospitals including St Mary's. This allocation required a revision of the PAS business case, which was now aimed at bidding for some of the £21 million. Since the function of Region would be rendered obsolete as the NHS was reorganized into Hospital Trusts (providers) and Local Health Authorities (purchasers), there was a tendency for Region to hold onto the control of IT resources as long as possible:

*'There was a lot of Regional politics involved because they still wanted to control the PAS replacement'* RM Manager

During this time, Poole, Bournemouth, and Swindon, while part of Region, set up a competing bid for HIS money from a national fund. Wessex Region disapproved of this move and put in a rival bid to the same funding source. St Mary's was involved with the Poole consortium and therefore was applying to two sources for HIS funding. Both bids subsequently failed.

By the end of 1992, St Mary's had approval for building a computer room, together with some new offices. Region approved the local area network (LAN) in principle. Subsequently, however, technical questions were raised:

*'There was infighting at Region about who was responsible for what, because jobs were about to go (when Regional Health Authorities were removed and their responsibilities devolved to Hospital Trusts and Local Health Authorities), so people were demonstrating their responsibilities'* RM Manager

Meanwhile, in February 1993, nine clinical audit workstations were bought with clinical audit capital that had to be spent by the end of the financial year. This purchase was not part of the original IT strategy and was pursued by the clinicians independently of PAS and Case Mix procurement, although the information requirements overlapped significantly.

In April 1993, St Mary's Hospital became a Hospital Trust. A small Regional function remained, running large mainframe systems on behalf of a number of Hospital Trusts. At the same time, an outpost of the NHS management executive was set up in the region. This organization represented the provider side and dealt with capital expenditure above a certain level. St Mary's business case for PAS now hit further problems since Wessex Region was no longer responsible for its approval. This responsibility now lay with the Trusts Outposts who created new rules for business cases. Full and detailed costing was now required for a range of options, including 'do nothing'. The rule change required further work since some options, which St Mary's had considered inherently unsuitable, had not been costed.

In May 1993, requests for proposals for Case Mix and Nursing systems were lodged in the EC Journal, as required in public sector procurement. At this point, approval for LAN money was withdrawn. Wessex Region indicated that the business case would have to be approved by Trusts Outpost. The Outpost would not accept a separate business case for the LAN, since, it suggested, benefits depended on what was put on LAN. A combined PAS, LAN business case was now required. Again a 'do nothing' option was required. Each option was to be supported by full benefits analysis, SWOT, and risk analysis.

In May 1993, the business case for PAS was being redeveloped. Workshops were run to identify benefits, using a top-down approach. External consultants were called in to help develop alternative options and to cost options. Detailed cost-benefit analysis was carried out, involving, for example, the analysis and timing of nursing activities to work out exactly where time savings and thus cost savings could be made through computerization. Other options were generated, although it was clear what the sensible and preferred option was. A new business case for PAS and LAN was completed by October 1993, with the aim of having a PAS replacement, covering existing functions, live by April 1994.

A replacement PAS system was bought and went live in October 1994. The LAN went out to tender, but bids came out more expensive than expected, which led to further delays. Work finally started on the LAN in August 1995 and finished in November 1995. However, PAS remained a centralized system, not available on the network. The intention was to decentralize it and make it widely available over the network. Before decentralization was done, a study was



initiated on to how PAS could be used effectively. This study developed into a full-blown review of secretarial and clerical processes.

It was felt that the cost of some of these processes was relatively high compared with other hospitals. With support from Management Services, the PAS manager reviewed all processes associated with contracting, audit, and the use of PAS. The aim was to identify efficient uses of PAS in a way which was described as 'starting with a clean sheet of paper', a process not dissimilar to business process re-engineering. This exercise led to the development of an information strategy that focused on information needs for management control, clinical, communications, and commercial. An information strategy was being developed in place of the forgotten information technology strategy.

Case Mix software was not procured since there was no capital to purchase it and stories of the failure and inadequacy of Case Mix within hospitals were filtering through. Furthermore Case Mix was considered of little use if PAS could not support its data requirements. In the absence of Case Mix, contract data was extracted from PAS into ASCII files and loaded into spreadsheets or statistical packages. Such low technology solutions to contract analysis depended on a limited set of staff who could extract and manipulate the information and made it more difficult to justify the purchase of a large case mix system. Considerable emphasis was placed on alternative solutions to computing needs which made the best use of existing systems and simple tools:

*'We can produce a marvelous case mix so that you can drill down to individual patients but I'm not sure that's necessarily helpful. What [clinical services managers] need to know [in terms of information] we can produce very well and relatively quickly from standard PAS and spreadsheets at low cost.'* PAS Manager

Until 1995, St Mary's maintained computer links with Wessex Region. Terminals linked to Region's mainframe supported a finance system. However, in 1995 a new finance system was installed at St Mary's which rendered the hospital independent of Wessex Region in IT support.

A nursing system was not procured. Firstly, care planning was seen as a key issue that could be addressed by simple card indexes. Nursing management systems were seen as too large and inappropriate for the job. Secondly, the review of business processes involved looking at how specific processes were supported by existing systems. Some aspects of nursing systems could be covered by the personnel system. Thirdly the review of processes was leading to the development of a process-based view of nursing which saw patient care as multi-disciplinary. St Mary's moved away from an exclusive nursing system to consider multi-disciplinary patient care systems. PAS remained the core hospital management system at St Mary's, principally unchanged over the next six years. By 2001, order communications was still not implemented because no sound business case was made. Emphasis shifted away from new applications towards improving infrastructure. Changes both locally and nationally influenced IS strategy and its implementation.

As a result of the 1998 Information for Health national strategy work concentrated on developing a local implementation strategy that superceded the previous strategy. This new strategy focused on developing an electronic patient record, providing better information for clinicians and promoting links with GPs and other services. Outcomes of the local implementation strategy included further investment in infrastructure. Two hundred thousand pounds was spent on PCs and networking in 2000 and a similar investment was made in 2001. A project was initiated to connect GPs' desktop PCs to the hospital network to enable results dissemination and appointments booking. Work started on developing a Trust intranet to improve clinical computing and provide support for evidence-based medicine. The wider focus on clinical governance and the formation of local clinical governance teams increased the need for providing access to knowledge bases, some of which were provided nationally by the NHS. Locally, Trust mergers occurred which affected IS strategy significantly. In 1997, St Mary's merged with the local community health trust to form one health trust for the Isle of Wight, called the Isle of Wight Healthcare NHS Trust.

In 2001, Isle of Wight Trust merged with Portsmouth Health Authority, the closest health trust on the mainland. Some resources were already shared, particularly in specialties such as oncology and ear, nose, and throat, where St Mary's could not sustain a full service by itself. In anticipation of the merger, the local implementation strategies for St Mary's and Portsmouth were merged into one document, with an emphasis on electronic patient records. Co-operation between IS departments as a result of the merger promised a better use of resources. PAS support and enhancement would be shared. The IT manager believed that there would be a better chance of implementing order communications and procurement would be more effective.

Table 1. St Mary's Information Systems Implementation: Ambition and Achievement

Planned	Actual
	1991 (April) IS Strategy Document
1991 (July) Network implementation	1991 (July) Costs Benefits Analysis
1991 (July) Outpatient and Waiting List Modules for existing PAS	1991 (Oct) Case Mix Operational Requirements Prepared
1991 (Nov) New Pathology System	1991 (Oct) Business Case for HIS as a total package submitted to Region
1991 (Nov) New Ledger and Personnel Systems	1991 (Oct) Region asks for network to be taken out of business case
1991 (Dec) Case Mix Implementation	1991 (Dec) HIS Specification of Basic Requirements prepared by consultant
1992 (Sept) Complete HIS Consultancy work	1992 (Oct) PAS requirement submitted as separate bid - region-wide PAS replacement
	1992 (Autumn) LAN, PAS and Computer room requirements submitted as separate bids
	1992 (Oct) Consortium bid to HIS central
	1993 (Jan) St John becomes a trust. Region 'washes hands of bid'
	1993 (Feb) Clinical Audit Workstations procured
1993 (March) Integrated HIS	
	1993 (May) Pre-implementation audit
	1993 (May) LAN blocked
	1993 (May) EC Advert for PAS, Case Mix, Nursing
	1993 (Oct) New business case for PAS and LAN
	1994 (Oct) New PAS goes live
	1995 (Jan) New LAN Contract let
	1995 (May) Work on LAN starts
	1995 (May) Process study including SWOT.
	1995 (Nov) LAN Implementation completed
	1997(April) Merger with local community case trust.
	1998 (Sept) Local implementation Strategy written.
	2000 (Sept) Project Connect Initiated
	2000 (April) New PC Infrastructure installed
	2001 (April) Further PC Infrastructure installed
	2001(April) Merger with Portsmouth Health Authority

Whatever plans St Mary's had in its own local implementation strategy would be superceded by the new strategy resulting from the merger. As with previous strategies, IS plans were quickly rendered obsolete by local organizational changes as well as by national initiatives. In such an environment, IS plans and strategies provided no more than an opportunity to learn and make changes of a constantly changing IS environment, as shown by the timeline in Table 1.

## V. CONCLUSION

This case study illustrates the gap between the plans and expectations of the developers of an IS strategy and the actual outcome. The vision of a hospital-wide, integrated system never materialized. The network strategy took six years to be implemented. Few of the IT systems planned in the strategy were ever implemented. Plans for case mix, nurse information systems and ward-based ordering were shelved. A new PAS went live more than a year after an integrated HIS was expected to go live. In reflecting on this case study, we need to consider why the gap occurred.

As a public-sector organization, the hospital was subjected to more significant external influences than might be expected in a private organization. Political and managerial changes in the UK health sector during the late 1980's and 1990's resulted in changing financial control. The IT managers at the hospital spent much time trying to meet the demands of different financial controllers. Furthermore, changes in focus and philosophy within the hospital invalidated requirements for some of the IT systems. The IT strategists developed the IT strategy in the context of their understanding of the technology, organization and environment. Changes to the context were, to a certain extent, unpredictable.

Since changes in the external and internal environment could so easily render the IT strategy obsolete, what was the value its development? The IT strategy exercise had brought together clinicians and managers and established a new mutual understanding of the value of IT and the problems associated with running IT systems in a large organization. The IT manager developed his understanding of the role of IT within the hospital and gained new understanding of the importance of information. It was clear that, despite the lack of resources and the non-implementation of several planned IT systems, learning had occurred to the benefit of the IT staff and the hospital. It may be that the process of IT strategy development was as important as the content of the IT strategy. A new understanding of the nature of the existing IT systems, and possibilities for future IT systems may benefit the everyday running of the IT department and the continuous development of strategy. We should therefore not judge the success of an IT strategy solely on the extent to which the specified IT systems are implemented.

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## GLOSSARY

<i>Case Mix Management System</i>	A management information system which draws together information from many hospital systems to give an entire picture of a patient's progression through the hospital including theatre visits and all procedures, to support clinical audit and
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	management costing.
<i>Clinical Governance</i>	A national framework through which NHS organizations are accountable for continuously improving the quality and clinical effectiveness of their services. Clinical audit forms one part of clinical governance
<i>Contracts</i>	Agreements between purchasers and providers which defined the number and cost of specific procedures to be delivered within a given time period.
<i>EC Journal</i>	The <i>Official Journal of the European Communities</i> (OJEC). Journal in which contract notices for public procurements must be published.
<i>Electronic Health Record (EHR)</i>	A longitudinal record of a patient's health and healthcare from cradle to grave, combining primary care as well as hospital stays.
<i>Electronic Patient Record (EPR)</i>	A record containing a patient's personal details, diagnosis and details about treatments during a hospital stay.
<i>GP Fundholder</i>	Primary care group which hold funds for purchasing healthcare from the providers of its choice.
<i>HIS (Hospital Information System)</i>	A fully integrated information systems which incorporates all hospital administrative functions and information needs.
<i>Information Management and Technology</i>	Term used within the NHS to cover the management, implementation and support of information and its associated technology within NHS organisations.
<i>Hospital Trust</i>	Self-governing hospital or group of hospitals responsible for its own budget provided direct from government and from purchasers.
<i>Local Health Authority</i>	Local organization responsible for assessing the healthcare needs of a geographical area, using, for example, data about epidemiological trends, in order to define levels of activity which need to be requested from providers.
<i>Medical Audit</i>	The analysis of procedures and outcomes for given patient conditions in order to improve medical practice
<i>NIS (Nursing Information System)</i>	A system for managing nursing activity including rostering and the planning and delivery of individual patient care.
<i>Operational Requirement Document</i>	(also known as Statement of Need). A definition of the functional and managerial requirements for an information system that is to be procured.
<i>PAS (Patient Administration System)</i>	The principal system for controlling patient admission into a ward, discharge from a ward and outpatient visits.
<i>Provider</i>	Hospital or simple organisation providing acute services for a purchaser.
<i>Purchaser</i>	An authority responsible for ordering health services from a provider. Usually a local health authority, general practitioner or group of practitioners.
<i>Region (Regional Health Authority)</i>	Formerly a regional department of the NHS responsible for managing several hospitals within a geographical area. Disbanded when hospitals were given trust status.
<i>Trust Outpost</i>	Residual organisation left after the disbanding of Regional Health Authorities which administered residual functions which for practical reasons could not be immediately devolved to Hospital Trusts

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